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10/695,248	10/27/2003	Rodney L. Naro	NAROP0335US	4323

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EXAMINER
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MCNELIS, KATHLEEN A

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 05/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/695,248

Applicant(s)

NARO, RODNEY L.

Examiner

Kathleen A. McNelis

Art Unit

1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-4, 6, 7 and 9-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-4, 6, 7 and 9-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### **Claims Status**

Claims 2-4, 6, 7 and 9-24 remain for examination wherein claims 2-4, 6, 7 and 9-22 have been amended and claims 23 and 24 are new.

### **Status of Previous Rejections**

The previous rejection of claims 1, 8 and 18-20 under 35 U.S.C. 102(b) is withdrawn in view of applicants' cancellation of claims 1 and 8 and amendment of claims 18-20.

The previous rejections of claims 2, 3, 7, 9, 10, 12, 21 and 22 under 35 U.S.C. 103(a) as being unpatentable over Kemeny et al. (U.S. Pat. No. 5,279,639) are maintained. Further, claims 18-20 which have been amended to depend now from claim 9 and new claim 24 are also rejected.

The previous rejection of claims 4-6 and 11 under 35 U.S.C. 103(a) as being unpatentable over Kemeny et al. in view of Threlkeld is maintained (substituting claim 2 for claim 1 and 9 for 8 in the application of Kemeny et al.).

The previous rejection of claim 13 under 35 U.S.C. 103(a) as being unpatentable over Kemeny et al. in view of Graf is maintained (substituting claim 9 for 8 in the application of Kemeny et al.).

The previous rejection of claims 1, 8 and 14 under 35 U.S.C. 103(a) as being unpatentable over Dvorak et al. in view of Mrdjenovich is withdrawn in view of applicant's cancellation of claims 1 and 8, but is now applied to amended claims 2, 9, 10, 14 and 24.

The previous rejection of claims 15 and 16 under 35 U.S.C. 103(a) as being unpatentable over Dvorak et al. in view of Mrdjenovich and the ASM Metals handbook is maintained.

The previous rejection of claim 17 under 35 U.S.C. 103(a) as being unpatentable over Dvorak et al. in view of Mrdjenovich and Shimada et al. is maintained.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 2, 3, 7, 9, 10, 12, 18-22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kemeny et al. (U.S. Pat. No. 5,279,639).

Kemeny et al. is applied to the claims for the reasons set forth in the December 12, 2005 office action.

Regarding the amended claims 2, 3, 7, 9, 10, 12 and 18-22 related to the intended use of the additive (i.e. "cleaning"), since the composition is substantially identical to the claimed product/composition as discussed in the December 12, 2005 office action, the properties and functions are presumed to be inherent (See M.P.E.P. 2112.01). Further, while Kemeny does not disclose this use of the product, since the composition is substantially identical, examiner asserts that the flux disclosed by Kemeny is capable of performing the claimed use, therefore meeting the claim.

Regarding the amendment to claims 2 and 9 requiring that the additive be substantially fluorspar free, the composition disclosed by Kemeny et al. (col. 7 lines 25-45) discloses fluorspar (calcium fluoride) in a preferred range of 0-10%, with zero representing a composition where fluorspar is absent.

Regarding the amendment to claim 10 requiring that the cleaning additive consists "essentially of" as opposed to "including," the only components listed in Table 1 of Kemeny et al. which are required to be present (i.e. lower limit greater than zero) are magnesium carbonate, alumina, coke and calcium carbide. Coke and calcium carbide are not recited in instant claim 10.

Kemeny et al. teaches that the coke is added as a reducing agent and a protector of calcium carbide (col. 5 lines 20-25) and that calcium carbide is added to reduce FeO to Fe in the ladle (col. 4 lines 47-49). It is the examiner's position that the omission or reduction in quantity of an element with the consequent loss or reduction of its function would not be a patentable distinction (see M.P.E.P. 2144.04 II).

Regarding the amendment to claim 18, Kemeny et al. teaches that the invention is related to refining steel in a ladle (abstract). Kemeny et al. teaches that it is known in the art to include additives in the primary steelmaking furnace (col. 3 lines 3-15).

With respect to claim 24, Kemeny et al. discloses an additive comprising calcium carbonate, magnesium carbonate, alumina, silica and sodium oxide as soda ash as described above regarding the rejection of claim 2. Referring to Table 1 of Kemeny et al., the only ingredients listed which are required to be present (i.e. lower limit greater than zero) are magnesium carbonate, alumina, coke and calcium carbide. Coke and calcium carbide are not recited in instant claim 10. Kemeny et al. teaches that the coke is added as a reducing agent and a protectent of calcium carbide (col. 5 lines 20-25) and calcium carbide is added to reduce FeO to Fe in the ladle (col. 4 lines 47-49). It is the examiner's position that the omission or reduction in quantity of an element with the consequent loss or reduction of its function would not be a patentable distinction (see M.P.E.P. 2144.04 II).

Claims 4, 6 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kemeny et al. (U.S. Pat. No. 5,279,639) as applied to claims 2 and 9 and further in view of Threlkeld (U.S. Pat. No. 2,862,809).

Kemeny et al. in view of Threlkeld is applied to the claims for the reasons set forth in the December 12, 2005 office action.

The amendment to claim 4 that the release agent "includes polyglycol" is a combination of previously presented claim 4 with canceled claim 5. The December 12, 2005 rejection related to claim 5 is now applied to amended claim 4.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kemeny et al. (U.S. Pat. No. 5,279,639) as applied to claim 9 and further in view of Graf (U.S. Pat. No. 2,760,859).

Kemeny et al. in view of Graf is applied to the claims for the reasons set forth in the December 12, 2005 office action.

The minor amendments to claim 13 do not change the scope of the claim.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kemeny et al. (U.S. Pat. No. 5,279,639) as applied to claim 2 and further in view of Leshchinsky et al. (U.S. Pat. No. 6,602,316).

Kemeny et al. discloses an additive consisting of calcium carbonate, magnesium carbonate, alumina, silica and soda ash as described above regarding claim 2.

Kemeny et al. does not disclose that the alumina and silica are in the form of a complex aluminosilicate.

Leshchinsky et al. discloses a method for producing briquettes for the liquefaction of metallurgical slag (abstract) by recovering slag from aluminum production which Leshchinsky et al. teaches is an aluminosilicate (col. 6 lines 5-30). The briquette can be used in the manufacture of iron and steel to lower the viscosity of the melt, which considerably reduces costs (col. 3 lines 60-65). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an aluminosilicate as taught by Leshchinsky et al. in the steel making process of

Kemeny et al. to lower the viscosity of the melt and considerably reduce costs as taught by Leshchinsky et al.

Claims 2, 9, 10, 14 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dvorak et al. (U.S. Pat. No. 3,721,547) in view of Mrdjenovich (U.S. Pat. No. 4,137,071)

Dvorak et al. discloses a method for fluxing and fluidizing the slag in a cupola by adding a fluxing material comprising calcium oxide as limestone (i.e. calcium carbonate) from 30-60%, alumina from 5 to 25%, sodium oxide from 20 to 50% and silica up to about 1% (abstract).

Dvorak et al. does not disclose adding magnesium carbonate to the flux.

Mrdjenovich discloses a low cost method of fluidizing cupola slag wherein the fluxing and fluidizing charge uses magnesia substituted for a part of the calcium carbonate. Mrdjenovich teaches that in prior art, calcium fluoride used to fluidize the slag generated hydrogen fluoride gas which condensing as hydrofluoric acid deteriorated the effectiveness of collection equipment and was expensive (col. 1 lines 1-68). Mrdjenovich substitutes magnesia in the form of dolomite (45% magnesium carbonate) which decomposes at a lower temperature than high calcium stone. The combination of magnesia and soda ash replace fluorspar (abstract and col. 3 lines 30-59) in providing fluidity (col. 2 lines 1-12). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use magnesium carbonate as taught by Mrdjenovich as a substitute for calcium fluoride in the flux of Dvorak et al. to fluidize the slag at a lower cost in materials and equipment wear as taught by Mrdjenovich. Mrdjenovich discloses a general substitution of  $\frac{1}{2}$  limestone and  $\frac{1}{2}$  dolomite (abstract and col. 3 lines 3-8). Replacing  $\frac{1}{2}$  of the limestone in Dvorak et al. with dolomite results in the following estimated composition:

	From Dvorak	Dvorak in view of Mrdjenovich	Instant claims 2, 9 and 24	Instant claim 10
Limestone (CaCO <sub>3</sub> )	30 – 60	15 – 30	8 – 28.7	12 – 16
Dolomite (Mg CO <sub>3</sub> CaCO <sub>3</sub> )	---	15 – 30	0 – 18.5	11.5 – 15
Alumina	5 – 25	5 – 25	3.6 – 18	8 – 14
Silica	0 – 1	0 – 1	1.4 – 7.1	4.5 – 6.5
Sodium oxide	20 - 50	20 - 50	19.4 – 46.4	26.1 – 31.9

The ranges of Dvorak in view of Mrdjenovich either overlap or are close enough to the claimed ranges such that it would have been obvious to one of ordinary skill in the art at the time the invention was made:

- To use between 15 and 28.7% or 15 and 16% calcium carbonate because Dvorak in view of Mrdjenovich teaches that the entire range of between 15 and 30 % is useful for treating slag in a cupola;
- To use between 15 and 18.8 or 15% magnesium carbonate because Dvorak in view of Mrdjenovich teaches that the entire range of between 15 and 30 % is useful for treating slag in a cupola;
- To use between 5 and 18% or 8 and 14% alumina, because Dvorak in view of Mrdjenovich teaches that the entire range of between 5 and 25 % is useful for treating slag in a cupola;
- To use between 20 and 46.4% or 26.1 and 31.9% sodium oxide, because Dvorak in view of Mrdjenovich teaches that the entire range of between 20 and 50 % is useful for treating slag in a cupola; and
- To use 1.4% silica, since Dvorak in view of Mrdjenovich teaches that the entire range of between 0 and 1 % is useful for treating slag in a cupola, and one of ordinary skill in the art would expect the same properties to result from the addition of 1.4% as of 1%. It has been well settled that where claimed ranges and prior art ranges do not overlap but lie close enough that one of ordinary skill in the art would expect the same properties to result, a prima facie case of obviousness exists (M.P.E.P § 2144.05).



Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dvorak et al. (U.S. Pat. No. 3,721,547) in view of Mrdjenovich (U.S. Pat. No. 4,137,071) as applied to claim 14 and further in view of the ASM Metals Handbook, 9<sup>th</sup> edition, Vol. 15 Casting (pp. 368-374).

Dvorak et al. in view of Mrdjenovich and further in view of the ASM Metals Handbook is applied to the claims for the reasons set forth in the December 12, 2005 office action.

The correction of typographical errors in claims 15 and 16 do not change the scope from the previously rejected claims.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dvorak et al. (U.S. Pat. No. 3,721,547) in view of Mrdjenovich (U.S. Pat. No. 4,137,071) as applied to claim 14 and further in view of Shimada et al. (U.A. Pat. No. 5,559,827).

Dvorak et al. in view of Mrdjenovich and further in view of Shimada et al. is applied to the claims for the reasons set forth in the December 12, 2005 office action.

The correction of typographical errors in claims 15 and 16 do not change the scope from the previously rejected claims.

### ***Response to Arguments***

Applicant's arguments filed 3/13/2006 have been fully considered but they are not persuasive.

Applicant's arguments are summarized as follows:

1. The claims have been amended to reflect the intended use is as a cleaning additive for furnace walls and inductor loops by fluxing and fluidizing build-up in molten iron rather than as a flux for refining steel.

2. Production of cast iron is significantly different than production of steel so that one of ordinary skill in the art of making cast iron would not look to the steel industry for slag cleaning additives.
3. The amended claims specify that the additive is substantially free of fluorspar. While Kemeny et al. does not absolutely require fluorspar in its additive, it does list fluorspar as part of its preferred ingredients and does not provide any teaching regarding the undesirability of fluorspar.
4. The transitional phrase in claim 10 has been modified to "consists essentially of" which makes the listing recited there under patentably distinct over Kemeny et al. because Kemeny et al. discloses materials which are not recited in claim 10.

Examiner's responses to these arguments are as follows:

1. The responses to this argument are broken down by type of claims:
  - a. Claims 2-7 related to a cleaning additive: Since the applicant is claiming a product/composition, the properties or functions are presumed to be inherent when the product/composition disclosed in prior art is substantially identical to the claimed product/composition (See M.P.E.P. 2112.01). In addition, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. (See M.P.E.P. 2114 and 2115).
  - b. Claims 9-22 related to a method for treating molten iron in a furnace or treatment vessel: In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., type of furnace) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).
2. The features upon which applicant relies (i.e., producing cast irons in cupolas, coreless induction and channel furnaces) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. The product claims (2-7) are interpreted as discussed above in 1(a). The method claims (9-22) recite "molten

iron”, which examiner asserts includes steel, since steel is an iron alloy and “a furnace or treatment vessel” which examiner asserts includes any furnace or treatment vessel suitable for containing molten iron. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

3. As applicant points out, Kemeny et al. does disclose calcium fluoride in the composition of in col. 7, however the preferred range is given as 0-10%. Therefore while Kemeny et al. does also discuss the benefits of fluorspar, it also discloses a composition that is essentially free of fluorspar. It has been well established that the use of patents as references is not limited to what the patentees described as their own inventions and a reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art, including nonpreferred embodiments (See M.P.E.P. 2123).
4. The amendment has been addressed above in the rejection of claim 10 under 35 U.S.C. 103(a).

### *Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 1742

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kathleen A. McNelis whose telephone number is 571-272-3554. The examiner can normally be reached on M-F 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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